

“Dr. Barry cannot, I feel convinced, imagine that I am exceeding the bounds of propriety in publicly noticing what he was kind enough to show me in private. Feeling assured that his object is no other than the advancement of science, I can only say that I have no other motive; but advance these objections to his views with the idea that it is the duty of every one who has the opportunity to throw his mite into the common heap; and that the opposition of any theory will either bring forward evidence explaining the difficulties, and thus fixing truth on an immoveable basis; or bring up some new views, by means of which the old difficulty will be solved, and the same truth irresistibly founded.”

9 St. John's Square, April 1843.

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL SOCIETY.

December 8, 1842.—The following papers were read, viz. :—

“Observations on the Blood-corpuscles, particularly with reference to opinions expressed and conclusions drawn in papers ‘On the Corpuscles of the Blood,’ and ‘On Fibre,’ recently published in the Philosophical Transactions.” By T. Wharton Jones, Esq., F.R.S.

The author points out what he considers to be important errors in the series of papers by Dr. Martin Barry, which have lately appeared in the Philosophical Transactions, and are entitled, “*On the Corpuscles of the Blood,*” and “*On Fibre.*” He alleges that Dr. Barry has generally confounded the colourless corpuscles contained in the blood with the red corpuscles of the same fluid; each of which latter kind consists of a vesicle or cell, with thick walls, but in a collapsed and flattened state, and having therefore a biconcave form, and in consequence of its thick wall being doubled on itself, presenting under the microscope a broad circumferential ring, which is illuminated or shaded differently from the depressed central portion, according to the focal adjustment of the instrument: while the colourless corpuscles, on the other hand, are of a globular shape, strongly refractive of light, and granulated on their surface, and are of less specific gravity and of somewhat larger size than the red corpuscles. The author quotes various passages from Dr. Barry's papers in proof of his assertions, and refers particularly to fig. 23 of his second paper on the corpuscles of the blood. He farther states, that Dr. Barry's description of the appearances of what he terms the red corpuscles, in paragraphs 53, 68, and 76 of his second paper, can, in fact, apply only to the colourless corpuscles: and he observes, that even when Dr. Barry does, at last, in his “Additional Observations,” advert to the distinction between the red and the colourless globules, he considers the latter as being merely “the discs” contained in the red globules appearing under an altered state.

The author regards as wholly erroneous the notion which Dr. Barry entertains that a fibre exists in the interior of the blood-corpuscle; and that these fibres, after their escape from thence, constitute the fibres which are formed by the consolidation of the fibrin of the *liquor sanguinis*. The beaded aspect presented by the double contour of the thick wall of the red corpuscle when it has been acted upon either by mechanical causes or by chemical reagents, of which the effect is to corrugate the edge, and to bend it alternately in opposite directions, has, in the opinion of the author, given rise to the illusive appearance of an internal, annular fibre. The appearance of flask-like vesicles presented by some of the red corpuscles, with the alleged fibre protruding from their neck, the author ascribes altogether to the effects of decomposition, which has altered the mechanical properties of the corpuscle, and allowed it to be drawn out, like any other viscid matter, into a thread.

In conclusion, he remarks, that if these statements of Dr. Barry should be recognised as fundamental errors in his premises, the whole of the reasonings built upon them must fall to the ground.

“Spermatozoa observed within the Mammiferous Ovum.” By Martin Barry, M.D., F.R.S. L. and Ed.

In examining some ova of a rabbit, of twenty-four hours, the author observed a number of spermatozoa in their interior.

Dec. 15.—A paper was read, entitled “Experimental Inquiry into the cause of the Ascent and Continued Motion of the Sap; with a new method of preparing plants for physiological investigations.” By George Rainey, Esq., M.R.C.S. Communicated by P. M. Roget, M.D., F.R.S.

The ascent of the sap in vegetables has been generally ascribed to a vital contraction either of the vessels or of the cells of the plant: the circumstances of that ascent taking place chiefly at certain seasons of the year, and of the quantity of fluid, and the velocity of its motion being proportional to the development of those parts whose functions are obviously vital, as the leaves and flowers, have been regarded as conclusive against the truth of all theories which professed to explain the phenomenon on purely mechanical principles. The aim of the author, in the present paper, is to show that these objections are not valid, and to prove, by a series of experiments, that the motion of the sap is totally independent of any vital contractions of the passages which transmit it; that it is wholly a mechanical process, resulting entirely from the operation of endosmose; and that it takes place even through those parts of a plant which have been totally deprived of their vitality.

The lower extremity of a branch of *Valeriana rubra* was placed, soon after being gathered, into a solution of bichloride of mercury. In a few hours a considerable quantity of this solution was absorbed, and the whole plant, which had been previously somewhat shrunk from the evaporation of its moisture, recovered its healthy appearance. On the next day, although the lower portion of the branch had lost its vitality, the leaves and all the parts of the plant into which no bichloride had entered, but only the water of the solution, were

perfectly healthy and filled with sap. On each of the following days additional portions of the stem became affected in succession; but the unaffected parts still preserved their healthy appearance, and the flowers and leaves developed themselves as if the plant had vegetated in pure water and the whole stem had been in its natural healthy state. On a minute examination it was found that calomel, in the form of a white substance, had been deposited on the internal surface of the cuticle; but no bichloride of mercury could be detected in those parts which had retained their vitality; thus showing that the solution of the bichloride had been decomposed into chlorine, calomel, and water, and had destroyed the vitality of the parts where this action had taken place; after which, fresh portions of the solution had passed through the substance of the poisoned parts, as if they had been inorganic canals. Various experiments of a similar kind were made on other plants, and the same conclusions were deduced from them.

As the addition of a solution of iodide of potassium converts the bichloride of mercury into an insoluble biniodide, the author was enabled, by the application of this test to thin sections of the stems of plants into which the bichloride had been received by absorption, to ascertain, with the aid of the microscope, the particular portion of the structure into which the latter had penetrated. The result of his observations was, that the biniodide is found only in the intercellular and intervascular spaces, none appearing to be contained within the cavities of either cells or vessels.

As the fluids contained in the vessels and in the cells hold in solution various vegetable compounds, their density is greater than the ascending sap, which is external to them, and from which they are separated by an intervening organized membrane. Such being the conditions requisite for the operation of the principle of endosmosis, the author infers that such a principle is constantly in action in living plants; and that it is the cause of the continual transmission of fluids from the intervascular and intercellular spaces into the interior of the vessels and cells, and also of the ascent of the sap.

Jan. 19, 1843.—“On the minute structure of the Skeletons or hard parts of Invertebrata,” by W. B. Carpenter, M.D.

The present memoir is the first of a series which the author intends to communicate to the Society, and relates only to the Mollusca; and he proposes, hereafter, to extend his inquiries to the skeletons of the Echinodermata, and the various classes of articulated animals. After adverting to the classifications of shells proposed by Mr. Hatchett and Mr. Gray, from the propriety of which he finds reason to dissent, he proceeds to state the results of his microscopic examination of the texture of shells under the several following heads. First, shells having a prismatic cellular structure, as the Pinna, and which are composed of a multitude of flattened hexagonal calcareous prisms, originally deposited in continuous layers of hexagonal cells, and thus constituting a calcified epithelium, analogous with the enamel of the teeth. Secondly, those con-

sisting of membranous shell-substance, the basis of which, after the removal of its calcareous portion, presents nothing but a membranous film, of greater or less consistence, composed of several layers, but without the appearance of any cellular tissue: this membrane the author regards as being derived from the mantle, of which it was originally a constituent part, by the development of nucleolated cells; and the various corrugations and foldings of which it is susceptible in different species, introducing many diversities into the structure of the shells of this class. Thirdly, shells having a nacreous structure, and exhibiting the phenomena of iridescence; a property which the author ascribes to the plicated form of the membrane of the shell, combined with a secondary series of transverse corrugations. Fourthly, shells exhibiting a tubular structure, formed by cylindrical perforations occurring among the several layers, and varying in diameter from about the 20,000th to the 3500th part of an inch; but measuring on an average about the 6000th part of an inch, and presenting a striking analogy with the dentine or ivory of the teeth. The last sections of the paper relate to the epidermis and the colouring matter of shells.

References are made, in many parts of the paper, to illustrative drawings; which, however, the author has not yet supplied.

Feb. 9.—“On the Structure and Mode of Action of the Iris:” by C. R. Hall, Esq. Communicated by P. M. Roget, M.D., Sec. R.S.

After reciting the various discordant opinions entertained at different periods by anatomists and physiologists, relative to the structure and actions of the iris, the author proceeds to give an account of his microscopical examination of the texture of this part of the eye, in different animals. He considers the radiated plicæ, which are seen on the uvea in Mammalia, as not being muscular; but he agrees with Dr. Jacob in regarding them as being analogous in structure to the ciliary processes. The white lines and elevations apparent on the anterior surface of the human iris, he supposes to be formed by the ciliary nerves which interlace with one another in the form of a plexus. The iris, he states, is composed of two portions; the first, consisting of a highly vascular tissue, connected by vessels with the choroid, ciliary processes, sclerotica and cornea, and abundantly supplied with nerves, which, in the human iris, appear, in a front view, as thread-like striæ; and which are invested, on both surfaces, by the membrane of the aqueous humour. They are more or less thickly covered with pigment, which, by its varying colour, imparts to the iris on the anterior surface its characteristic hue; and, by its darkness on the posterior surface, renders an otherwise semi-transparent structure perfectly opaque. The second component portion of the iris consists of a layer of concentric muscular fibres, which fibres, in Man and Mammalia generally, are situated on the posterior surface of the pupillary portion of the iris; but which in Birds extend much nearer to the ciliary margin, and consequently form a much broader layer. In Fishes and in some Reptiles they do not exist at all.

The author then proceeds to inquire into the bearings which

these conclusions may have on the physiology of the iris. He thinks that the phenomena of its motions can receive no satisfactory explanation on the hypothesis of erectility alone, or on that of the antagonism of two sets of muscular fibres; the one for dilating, the other for contracting the pupil. He is convinced that the contraction of the pupil is the effect of muscular action; but does not consider the knowledge we at present possess is sufficient to enable us to determine the nature of the agent by which its dilatation is effected. He, however, throws it out as a conjecture, that this latter action may be the result of an unusual degree of vital contractility, residing either in the cellular tissue, or in the minute blood-vessels of the iris. It is from elasticity, he believes, that the iris derives its power of accommodation to changes of size, and its tendency to return to its natural state from extremes, either of dilatation or of contraction; but beyond this, elasticity is not concerned in its movements.

Feb. 16.—“On Fissiparous Generation:” by Martin Barry, M.D., F.R.S. L. and Ed.

The author observes that the blood-corpuscle and the germinal vesicle resemble one another* in the circumstance of an orifice existing in the centre of the parietal nucleus of both. He pursues the analogy still farther, conceiving that as a substance of some sort is introduced into the ovum through its orifice, which the author terms *the point of fecundation*, so the corpuscles of the blood may undergo a sort of fecundation through their corresponding orifice; and also that the blood-corpuscle, like the germinal vesicle, is propagated by self-division of its nucleus; a mode of propagation which he believes to be common to cells in general. The nucleus of the germinal vesicle, or original parent cell of the ovum, gives origin, by self-division, to two young persistent cells, endowed with qualities resulting from the fecundation of the parent cell; these two cells being formed by assimilation, out of a great number of minuter cells which had been previously formed. This account of the process, which takes place in the reproduction of the entire organism, explains, according to Dr. Barry, the mysterious reappearance of the qualities of both parents in the offspring.

Certain nuclei, which the author has delineated in former papers as being contained within and among the fibres of the tissues, he conceives to be, in like manner, centres of assimilation, from observing that they present the same sort of orifice, that they are reproduced by self-division, and that they are derived from the original cells of development; that is, from the nuclei of the corpuscles of the blood. He considers that assimilation of the substance introduced into the parietal nucleus of the cell is part of the process which propagates the cell; that the mode of reproduction of cells is essentially fissiparous, and that the process of assimilation prepares them for being cleft.

A pellucid point is described by the author as being “contained in a certain part of the cell-wall, and as representing the situation

* Dr. Barry requests us to add, that the words “in certain states” are wanted here.—EDIT.

of a highly pellucid substance, originally having little if any colour." This substance, which he considers as being primogenital and formative, he denominates *hyaline*, and ascribes to it the following properties. It appropriates to itself new matter, thus becoming enlarged; then divides and subdivides into globules, each of which passes through changes of the same kind. Under certain circumstances, it exhibits a contractile power, and performs the motions called *molecular*. It is the seat of fecundation, and it is by its successive divisions that properties descend from cell to cell, new properties being continually acquired as new influences are applied; but the original constitution of the hyaline not being lost. The main purpose for which cells are formed is to reproduce the hyaline; and this they do by effecting the assimilation which prepares it to divide; such division being thus the essential part of fissiparous generation.

The remaining part of the paper is occupied with a detailed account of these processes as they occur in the development of the ovum, and also in the changes exhibited by the corpuscles of the blood, in which fissiparous reproduction also takes place, and the red blood-discs are converted into fibrin, and thus give origin to the various tissues of the organs. The same theory of fissiparous reproduction he also applies to the formation of the muscular fibre, in connexion with his belief that it is composed of a double spiral filament. Contractile cilia, he supposes, are also formed by the elongation of nuclei, the filaments proceeding from them in opposite directions. The author considers, lastly, the subject of the fissiparous reproduction of the Infusoria, and particularly of the *Volvox globator*, the *Chlamido-monas*, *Baccillaria*, *Gonium*, and the *Monadina* in general; and applies the same theory to gemmiparous reproduction, and to the so-called spontaneous generation of infusoria and parasitic entozoa.

March 16.—“Further Observations on the descending fluids of Plants, and more especially the Cambium.” By George Rainey, Esq. Communicated by P. M. Roget, M.D., Sec. R.S.

The author relates an experiment in proof of the sap descending from the upper to the lower part of an exogenous tree, through vessels which are continuous from the leaves to the roots; the course of these vessels being shown by the addition of a solution of iodide of potassium after they had taken up by absorption a quantity of a solution of acetate of lead. The fluids in these vessels are, he conceives, separated from the sap, which is ascending from the roots, only by the membrane of which they are composed. When the leaf-buds of a tree are vegetating, large separations are observable between the cells of the bark, and also between the bark and the wood; while no such separations are apparent when the leaf-buds are entirely inactive. These separations are various in size, and irregular in form; their parietes consist of rows of cells, piled up one above another, like the bricks of a wall: and their cavities all communicate with one another. From these and other anatomical facts, which are given in detail by the author, he concludes that the

propulsion of the sap along the vessels, resulting from the operation of endosmose, will explain the descent of the cambium, which, being the nutritious portion of the vegetable fluids, corresponds in its nature to the chyle in animals.

ROYAL SOCIETY OF EDINBURGH.

March 27, 1843.—“On the Growth and Migration of the Sea Trout of the Solway (*Salmo trutta*).” By Mr. John Shaw, Drumlanrig. Communicated by James Wilson, Esq., F.R.S.E.

The author has here pursued the same course of experimental inquiry regarding the Sea Trout as that formerly followed in relation to the salmon. Having obtained impregnated ova from a pair of spawning fish, he conveyed these ova to his experimental ponds. This was on the 1st of Nov. 1839, and the young were excluded from the egg in seventy-five days. They resembled salmon of the same age, but were somewhat smaller and paler. They took two years to grow about 7 inches, and the majority were then converted into smolts, but about one-fourth did not assume the silvery lustre, and this peculiarity, Mr. Shaw thinks, distinguishes a like proportion even in the rivers. He then experimented on the smolts in the natural streams, and found that after descending to the sea they returned as herlings (*Salmo albus* of Dr. Fleming) in July and August, with an addition to their weight of 7 or 8 ounces. These herlings spawn towards the end of the season of their first ascent, and after revisiting the sea they ascend the rivers again in the ensuing months of May and June, with an average weight of $2\frac{1}{2}$ lbs. This increase takes place almost entirely in the sea. After spawning for the second time, they descend for the third time to the sea, and make their appearance again in fresh water in the course of the ensuing summer, weighing 4 lbs. They are now in their fifth year, including the two seasons they had passed as fry, anterior to the assumption of the migratory dress and instinct. Descending seawards for the fourth time, they weigh about 6 lbs. when next seen in the rivers in the course of their sixth summer. These at least were the progressive changes and rates of increase observed by Mr. Shaw in specimens distinctly marked, and carefully noted when retaken successively from year to year. The peculiar marks imposed each season are detailed in his paper, and the whole subject is illustrated by an extensive series of specimens from the day of hatching to the middle of the sixth year. These specimens are now in the Society's museum.

April 17.—Professor Connell read a paper on the Presence of Organic Matter in the purest Water from Terrestrial Sources.

Sir John MacNeill then read a Biographical Sketch of the late Sir Charles Bell, K.H.

Dr. Douglass Maclagan read a notice regarding the Bebeeru Tree of British Guiana. Of this last paper we present a brief sketch. The plant bearing the above Indian name, and also called Siperi by the Dutch colonists, furnishes the hard and heavy timber known by the name of Greenheart. The object of the present paper was to

state the result of experiments made by the author on the bark and seeds of the tree, which had been found by Mr. Rodie, late surgeon R.N., to contain a vegetable alkali possessed of the power of checking intermittent fevers. Dr. Maclagan stated that the tree was unknown to botanists. Sir William Hooker and Dr. Lindley had seen the fruit and declared it to be lauraceous, but the author had been unable to find in Nees v. Esenbeck's 'Systema Laurinarum' any genus or even suborder of lauraceous plants to which he could refer it. With regard to its chemical qualities, Dr. Maclagan stated that he had obtained both from the bark and seeds two distinct alkalies, both uncrystallizable; to one of which he applied Mr. Rodie's name Bebeerine; to the other he gave the name of Sipeerine. They could be separated by anhydrous æther, the bebeerine being soluble in that menstruum, whilst the sipeerine was not. Dr. Maclagan had likewise obtained, especially from the seeds, a peculiar crystallizable and deliquescent acid, which he called bebeeric acid, and which seemed to be distinct from every vegetable acid hitherto described.

The author stated that he had instituted experiments with a view to ascertain if a soluble salt of the alkalies could be procured which might be used as a substitute for sulphate of quinine when dear. He stated as the results of his trials that the produce did not amount to more than one and a half of sulphate per cent. from the bark; but he still calculated that if the bark could be got at a moderate price, the salt of the alkalies might be prepared at a cost inferior to that of sulphate of quinine. Dr. Maclagan stated that the bark appeared to be better suited for the purposes of manufacture than the seeds. The author mentioned that sulphate prepared under his directions had been sent out to Demerara, and had been tried there with marked success in intermittent fever by Dr. Watt. He had likewise used it with success in a few cases of ague in Edinburgh, and also in periodic headache, so that he had no doubt of its possessing considerable power as an antiperiodic remedy. Lastly, he mentioned that a secret preparation, sold under the name of Warburg's Fever Drops, reputed a good antiperiodic, appeared to him to be a tincture of bebeeru seeds.

ZOOLOGICAL SOCIETY.

May 10, 1842.—William Yarrell, Esq., Vice-President, in the Chair.

Mr. Gould exhibited and pointed out the characters of two new species of Kangaroo. The first of these belongs to the section to which Mr. Gray gave the name *Petrogale*, as was described under the name

PETROGALE CONCINNA. *Pet. corpore suprâ rufescente fusco alboque irrorato, ad latera flavescente, subtùs albo; caudâ dimidio apicali pilis longis vestitâ, his flavescenti-albis ad apicem nigris; pedibus pallidè fuscis, pilis sordidè albis crebrè interspersis; auribus mediocribus ad apicem paulo attenuatis.*

Longitudo ab apice rostri ad caudæ basin.	14	unc. lin.
———— caudæ	8	0

	unc.	lin.
<i>Longitudo tarsi digitorumque</i>	3	9
———— <i>auribus</i>	1	4
———— ab apice rostri ad basin auris	2	11

Hab. North-west coast of Australia.

This species of *Petrogale* is remarkable for its small size, the general pale colouring and the bright rusty tint of the upper parts of the body; these parts are freely pencilled with whitish and with brown; the sides of the neck and body are of a delicate yellowish hue, or might be described as very pale rust, and this is the prevailing hue of the head, which is nearly of a uniform tint; but is white, or nearly so, on the sides of the muzzle at the tip, and there is a trace of the usual white mark on the cheeks; above the eye is a spot of a pale rust-colour, and an indistinct brownish mark running towards the nostrils from the front of the eye; the ears are clothed within with white hair; externally they are of the same palish rusty yellowish hue as the upper surface of the head; the chin, throat and whole under parts are white, with a faint yellowish rusty tint; the outer side of the hinder legs is of a brighter tint than the sides of the body, but less red than the back; the feet are of a very pale brownish colour, freely pencilled with dirty white; a small space at the base of the tail is covered with fur of the same texture and colour as that of the body; beyond this the hairs of the tail are harsh, at first about half an inch or rather more in length, but becoming gradually longer towards the apex, where they are more than an inch long; these hairs are of a yellowish white colour, but the apical third of each hair is black. This species was brought to England by Lieut. Emery, of H.M.S. Beagle, and is now in the British Museum.

The second species belongs to the section or genus *Halmaturus*, and received from Mr. Gould the specific name *Binoë*, in honour of Benjamin Bynoe, Esq., to whom science is indebted for the discovery of many new and interesting objects in zoology. It is nearly allied to *Halm. agilis*, but in size is about equal to *Halm. Thetis*. The fur is harsh and adpressed, and for the most part of a very pale brownish yellow tint; the back, however, is freely pencilled with black, the longer hairs having the exposed portion of this colour; a slight brownish grey hue is observable next the skin in the hairs of the back, but they are nearly uniform throughout their length, if we except a small black point to the shorter hairs, and the exposed black portion of the longer hairs; the sides of the body and the limbs are of a paler hue, and are not pencilled with black; the abdomen may be described as of a dirty yellowish white colour; the tail is very nearly uniform in tint with the body, but a small portion at the apex is covered with brownish black hairs; the upper surface of the head is slightly tinted with brownish, and a mark of this colour runs from the eye to the tip of the snout on either side; adjoining this mark below is a pale mark; the ears have yellowish white hairs on the inner side, and rusty yellow hairs on the outer side; but along the anterior margin, and at the tip externally, the ears are black. The principal characters may be thus expressed:—

HALMATURUS BINOË. *Halm. corpore pallidè fuscescenti-flavo, suprâ nigro penicillato, subtùs dilutiore; caudâ ad apicem fuscescenti-nigrâ; auribus externè ad apicem, margineque anticè, nigris.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin.	21	0
————— ad basin auris	4	6
————— <i>caudæ</i>	20	0
————— <i>tarsi digitorumque</i>	7	9
————— <i>auribus</i>	2	3

Hab. Port Essington.

The following paper, by Mr. Lovell Reeve, entitled "Monograph of the genus *Tornatella*, a small group of Pectinibranchiate Mollusks of the family *Plicacea*, including descriptions of seven new species, from the collection of H. Cuming, Esq.," was then read.

TORNATELLA, Lamarck.

Testa ovalis, cylindracea, plerumque transversim striata, rarò lævissima, spirâ brevi, apice acuto; aperturâ longitudinali, supernè angustatâ, infernè integrâ, rotundatâ; columellâ incrassatâ, valdè plicatâ; labro simplici, solido, acuto. Molluscum marinum, pectinibranchiatum, operculo corneo, minuto, instructum.

The very wide range of characters which were selected by Linnæus for the determination of genera induced many inaccuracies in his method of classification which might certainly have been avoided, if, instead of generalizing upon the external variations of the shell, he had pursued a more searching inquiry, like his contemporaries Adanson and Forskael, into the nature of its animal inhabitant. His genus *Voluta*, for example, founded upon the character of the columella being obliquely plaited, included both phytophagous and zoophagous mollusks, animals both with and without proboscis, and respiratory siphon. The presence or absence of these organs, distinguishing the plant-eating from the flesh-eating mollusks, is however still indicated to a certain extent in the shell, by the basal formation of the aperture; and Bruguière, the conchologist of the 'Encyclopédie Méthodique,' appears to have sagaciously detected the difference between the shells of the true *Volutæ* and those which were subsequently selected by Lamarck for the formation of this genus; the base of the aperture being sinuated or canaliculated in the one, and entire in the other. But the alteration proposed by Bruguière was little or no improvement upon the arrangement of Linnæus; for in removing the *Tornatellæ* to his genus *Bulimus*, they became associated with a miscellaneous assemblage of mollusks, differing most essentially both in their organization and habits. They were then distinguished by Lamarck by the above generic title; whilst De Blainville included them, together with some air-breathing mollusks, in a new genus under the name of *Pedipes*. The arrangement followed by the learned author of the 'Manuel de Malacologie' was thus scarcely better than that of his predecessor Bruguière; he, however, cautiously abandoned it, when the propriety of Lamarck's distribution of the *Tornatella* was subsequently confirmed by Gray in the discovery of their being operculated.

Of the following thirteen species referred to this genus, seven are entirely new; five were collected by H. Cuming, Esq. in the Philippine Islands, one by Dr. Rüppell on the shores of the Red Sea, and one by Dr. Siebald on the coast of Japan.

1. *TORNATELLA FLAMMEA*. Lamarck, Anim. sans vert., vol. vi. part 2. p. 219; Lister, Synop. Conch., pl. 814. f. 24; Sowerby, Genera of Shells, No. 24. f. 1; Kiener, Iconographie des Coquilles, pl. 1. f. 1. Reeve, Conch. Syst., vol. ii. pl. 206. f. 4.

Auricula flammis lateritiis, Martini.

Voluta flammea, Gmelin.

Bulinus variegatus, Bruguière.

Hab. ad insulam Java.

This shell, which is distinctly figured both by Lister and Martini, is marked with a number of flesh-coloured stripes, running in a longitudinal direction from the spire.

Var. *α*. *Strigis rubris in maculis semilunaribus apertè divisis*.

Reeve, Conch. Syst., vol. ii. pl. 206. f. 6.

Hab. ad insulam Ticao, Philippinarum.

A beautiful variety, in which the longitudinal flesh-coloured stripes are divided into distinct patches, of the form of a crescent. Found by Mr. Cuming at the island of Ticao, in sandy mud at seven fathoms' depth.

Var. *β*. *Testá minore, maculis semilunaribus frequentioribus, indistinctis*.

Reeve, Conch. Syst., vol. ii. pl. 206. f. 1.

Hab. ad insulam Corrigidor, Philippinarum.

This variety is constantly smaller and of deeper colour; the crescent-shaped spots are thicker, and run so indistinctly the one into the other as often to be completely clouded over.

2. *TORNATELLA SOLIDULA*. Lamarck, Anim. sans vert., vol. vi. part 2. p. 220; Chemnitz, Conch., vol. x. pl. 149. f. 1405; Kiener, Iconographie des Coquilles, pl. 1. f. 2. Reeve, Conch. Syst., vol. ii. pl. 206. f. 7.

Voluta solidula, Linnæus.

Bulinus solidulus, Bruguière.

Hab. ad insulas Philippinarum, &c.

Several varieties of this shell, varying in colour from a bluish grey to a reddish brown, were found by Mr. Cuming amongst the Philippine Islands, in sandy mud at different depths, from 7 to 25 fathoms; they are, however, by no means confined to this locality.

3. *TORNATELLA COCCINATA*. *Torn. testá cylindraceo-ovatá, transversim striatá, albá, maculis coccineis minutis profusè ornatá; epidermide luted, leviter indutá; spirá depresso-conicá, suturis profundis, apice præcipuè exserto, acutissimo; columellá buplicatá, plicá maximá bilobá.*

Reeve, Conch. Syst., vol. ii. pl. 206. f. 10.

Hab. ad insulam Mindanao, Philippinarum.

This beautiful shell is very distinct from any variety of the preceding; the spire, which is remarkably sharp-pointed at the apex, is somewhat depressed and rounded; and the shell altogether is covered

with a number of small bright scarlet spots. It was found by Mr. Cuming at the island of Mindanao in sandy mud at the depth of twenty-five fathoms.

4. *TORNATELLA GLABRA*. *Torn. testá ovatá, transversim striatá, albd, nitidiusculá, maculis leucophæis variè denigratá; spirá subelátá, apice acuto; columellá buplicatá, plicá maximá vix bilobá.*

Reeve, Conch. Syst., vol. ii. pl. 206. f. 12.

Hab. ad insulam Negros, Philippinarum.

Mr. Cuming collected several of this species at the island of Negros. The shell is by no means a new one, but it has been hitherto confounded with the *Tornatella solidula*, probably in consequence of its resemblance in colour. It differs in form, and besides being more highly polished, is stamped with a certain peculiarity of character by which it cannot fail to be recognised.

5. *TORNATELLA TESSELLATA*. *Torn. testá oblongo-ovatá, albd, transversim striatá, striis plus minusve approximatis, interstitiis maculis helvinis tessellatis; spirá elatá, apice præcipuè acuto; columellá buplicatá, plicá maximá parùm bilobá.*

Reeve, Conch. Syst., vol. ii. pl. 206. f. 3.

Hab. In sinum Persicum.

This elegant little shell was found by Dr. Rüppell at the Red Sea, on the sands at low water. It is finely striated in a transverse direction, and the interstices are neatly tessellated with numerous pale flesh-coloured square spots.

6. *TORNATELLA FASCIATA*. Lamarck, Anim. sans vert., vol. vi. part 2. p. 220; Martini, Conch., vol. ii. pl. 43. f. 442 and 443; Encyclopédie Méthodique, pl. 452. f. 3. *a, b*; Kiener, Iconographie des Coquilles, pl. 1. f. 3; Reeve, Conch. Syst., vol. ii. pl. 206. f. 11.

Voluta tornatilis, Linnæus.

Auricula bifasciata, Martini.

Bulimus tornatilis, Bruguière.

Hab. ad oras Devonix, Insulæ Britannicæ.

Several of this well-known species have been recently dredged up from sandy mud at the depth of five fathoms, off the coast of Devonshire.

7. *TORNATELLA SIEBALDII*. *Torn. testá ovato-conicá, transversim striatá, rubicundulá, irregulariter dibaphá, spirá elatá, suturis albis, apice acuto; columellá uniplicatá, aperturá ovatá, labro tenui, acuto.*

Hab. ad oras Japonix.

This shell, which was brought by Dr. Siebald from Japan, is irregularly stained with a ruddy brown, exhibiting the appearance of having been dyed in two distinct colours; the sutures of the spire are perfectly white, and so is also the columella.

8. *TORNATELLA BULLATA*. Kiener, Iconographie des Coquilles, pl. 1. f. 4; Lister, Synops. Conch., pl. 714.

Hab. Indian Seas.

A small cylindrical bulla-shaped shell, which we have not included in this monograph without considerable hesitation.

9. *TORNATELLA NITIDULA*. Lamarck, Anim. sans vert., vol. vi. part 2. p. 221; Encyclopédie Méthodique, pl. 452. f. 2. *a, b*; Sowerby, Genera of Shells, No. 24. f. 2; Kiener, Iconographie des Coquilles, pl. 1. f. 5; Reeve, Conch. Syst., vol. ii. pl. 206. f. 5.

Hab. ad insulam Bohol, Philippinarum, &c.

Some specimens of this shell, found by Mr. Cuming at the island of Bohol, in sandy mud at eleven fathoms' depth, are smaller and more cylindrical than those hitherto known.

10. *TORNATELLA VIRGATA*. *Torn. testá rotundato-ovatá, subcylindraceá, albá, transversim bellè striatá, longitudinaliter strigis latis, nigerrimis, sinuosis, subdistantibus, vivide ornatá; spirá brevi, suturis distinctis, apice subobtusó; columellá uniplicatá.*

Reeve, Conch. Syst., vol. ii. pl. 206. f. 8 and 9.

Hab. ad insulam Masbate, Philippinarum.

This is a beautiful shell, and very distinct from any other species; it is of a pure transparent white, ornamented with a regular series of broad dark black stripes running down from the spire. Found by Mr. Cuming at the island of Masbate, in sandy mud at the depth of seven fathoms.

11. *TORNATELLA VENUSTA*. D'Orbigny, Voyage dans l'Amérique Méridionale, Mollusques, p. 399. pl. 56. f. 4 to 6.

Hab. ad Peruviam, propè ad Paytam.

A small fusiform shell, highly deserving of the title by which D'Orbigny has distinguished it.

12. *TORNATELLA INSCULPTA*. *Torn. testá parvâ, ovatâ, sulcis parallelis numerosis transversè insculptâ; spirá indistinctâ, apice acuto; maculis subaquilis ubiquè pictâ; columellâ biplicatâ, plicâ maximâ præcipuè bilobâ.*

Reeve, Conch. Syst., vol. ii. pl. 206. f. 2.

Hab. ad insulam Masbate, Philippinarum.

It is to be regretted that Mr. Cuming did not succeed in obtaining live specimens of this very characteristic shell, of which he found two only, lying dead upon the sands at the island of Masbate. The spire is rather prominent, but still so indistinct as scarcely to exhibit the volution of the whorls; the shell is then neatly sculptured from the apex to the base with transverse lines running exactly parallel with each other, and the whole surface is painted with light brown spots.

13. *TORNATELLA ORYZA*. *Torn. testá minutâ, oblongo-ovatâ, eburned, nitidâ, transversim sulcatâ, sulcis plus minusve approximatis; spirâ regulari, apice subacuto; columellâ uniplicatâ; aperturâ ovatâ, supernè attenuatâ; labro simplici, solido, acuto.*

Hab. ad insulam Cabbalonga, Philippinarum.

A small species, unlike any hitherto described; it is perfectly white (a fine ivory white), and deeply sulcated from top to bottom.

In concluding this monograph, it may be as well to state that the *Tornatella auricula* and *pedipes* of Lamarck should be referred to the genus *Auricula*. The *Tornatellæ* are strictly marine, dwelling in several fathoms' water; whilst the species just alluded to are inland, and amphibious, inhabiting swamps and marshy places.

June 14.—Richard Owen, Esq., Vice-President, in the Chair.

The following paper, by George Gulliver, Esq., F.R.S., entitled "Observations on the Muscular Fibres of the Œsophagus and Heart in some of the Vertebrate Animals," was read.

The present communication is a continuation of the observations on the muscular fibres of the œsophagus and heart published in the 'Annals Nat. Hist.' vol. v. p. 349.

The author applies the term voluntary to the striated muscular fascicles—extending along the entire length of the gullet, and even on the commencement of the cardiac extremity of the stomach in several animals, along more or less only of the tube in man and some other mammals, and wholly absent from it in many of the lower Vertebrata—because this fibre has all the anatomical characters of the muscular fibre of animal life, which no completely involuntary muscle has hitherto been found to possess. "If we are to judge of the office of the fibre in question from its structure, it must be concluded that in many Vertebrata the whole length of the gullet is capable of voluntary motion, in some the lower or posterior portion is not obedient to the will, while in others the motions of the entire gullet must be quite involuntary.

"That the muscular coat of the gullet should differ in animals of different orders will not appear surprising; but it was hardly to be supposed that a difference in the œsophageal sheath would be found in some genera of the same order. Yet such is the fact in the Feræ; and it is probable that further research into the anatomy of this order will disclose more differences in their minute structure, especially as my observations on the blood have shown that there is a remarkable diversity in the size of the blood-corpuscles or red particles of some of the subdivisions of the Carnivora*.

"Perhaps the extent of the muscular coat of the gullet may vary in the same subject at different periods of life. In young and middle-aged mares and geldings some of the muscular fibre of animal life may be generally traced on the gullet four or five inches from the stomach; but in a gelding twenty-five years old this fibre could not be found on the last ten inches of the gullet; and in an aged rabbit I found the striated muscular fascicles but sparingly on the last inch of the gullet, although in this animal generally they are most abundant in this situation.

"A summary of my inquiry concerning the extent of the voluntary muscular fibre on the gullet is subjoined. Some of the results may be modified by more facts, which are yet required to furnish a satisfactory view of the subject. I have had no opportunity of becoming acquainted with the researches of M. Ficinus and M. Valentin, referred to by Dr. Baly in his translation of Professor Müller's 'Physiology,' vol. ii. p. 851.

QUADRUMANA.

In this order, as in the human subject, the muscular fibre of animal life does not invest the lowest portion of the gullet.

* See Ann. Nat. Hist. vol. vii. p. 577; vol. viii. p. 533; and Appendix to Gerber's General Anatomy, p. 6-7.

CHEIROPTERA.

In the pipistrelle, the sheath of the gullet, excepting 1-16th of an inch at the stomachic end, was formed of the muscular fibre of animal life.

FERÆ.

Insectivora.—In the three British genera the muscular fibre of animal life covers the whole length of the gullet.

Canidæ.—The muscular fibre of animal life extends to the stomachic end of the gullet. In the silvery fox none of this fibre could indeed be detected on the terminal third of an inch of the gullet, which should be examined again in another individual.

Viverridæ.—In the African civet cat the striated muscular fascicles do not cover the last portion of the gullet.

Felidæ.—The stomachic end of the gullet is not clothed with the muscular fibre of animal life; but in the caracal a few irregular fibres were observed on the cardiac end of the gullet, perhaps belonging to the muscular fibre of animal life, although they were quite destitute either of transverse or longitudinal streaks.

Mustelidæ.—In the otter the muscular fibre of animal life covers the gullet, excepting about half an inch of its stomachic extremity; in three species of *Mustela* this fibre invests the whole gullet.

Phocidæ.—In the seal no muscular fibre of animal life was found on the gullet within an inch of the stomach.

Ursidæ.—In the genus *Nasua*, and in the sloth-bear and American bear, the gullet is throughout clothed with the muscular fibre of animal life, which in the latter animals is very thick and red on the last portion of the gullet, and extends on the cardiac extremity of the stomach.

CETACEA.

In a porpoise no muscular fibre of animal life could be found on four inches of the stomachic end of the gullet, although this fibre was abundant on the rest of the thoracic portion of the gullet.

RUMINANTIA.

The voluntary muscular fibre runs along the entire length of the gullet, and sometimes to a short distance on the cardiac extremity of the stomach. The striated muscular fibre on the last portion of the gullet is often mixed with a much greater proportion of the muscular fibre of organic life.

RODENTIA.

The whole length of the gullet is clothed with the muscular fibre of animal life.

MARSUPIALIA.

In the kangaroo and the squirrel-flying opossum no muscular fibre of animal life was found on the stomachic end of the gullet.

BIRDS, REPTILES, AND FISHES.

I have carefully searched for the striated muscular fascicles in the gullet of the birds and reptiles mentioned in the table, but in vain. In Birds the fibre of the superficial coat of the gullet is often

disposed transversely, in which respect it may be seen with the naked eye to differ from the œsophageal muscular sheath of mammals. In a few fishes the striated muscular fascicles invested the entire length of the gullet, and extended some distance on the stomach in others, as in the pike and bull-head. In the barbel some of these fascicles were found on the gullet or termination of the pharynx opposite to the posterior border of the gill-cover. In Fishes the striated muscular fasciculi of the gullet appear, from the measurements now given, to be much smaller than the fasciculi of the muscles of the body; and a like difference, though to a much smaller degree, often exists in mammals.

“ In the heart of the smaller species of the lower Vertebrata distinct muscular fibres are often not to be found, the structure being less distinct than in the heart of many mammals; generally composed of bands or fillets not easily separable from each other, and commonly about $\frac{1}{3000}$ th of an inch broad. These fillets are seldom clearly streaked transversely; they are irregularly and most minutely granulated, without the longitudinal arrangement of the granules so plainly visible in the beaded primitive fibrils of the heart of Mammalia. In short, the known points of resemblance between the muscular fibre of the heart of mammals and that of voluntary muscle are generally wanting in the structure of the heart of the smaller species of the lower Vertebrata, for the latter is more nearly allied to the muscular tissue of organic life as it exists in other parts.

“ In some of the voluntary muscles of many of the smaller Mammalia and Birds, as the common mouse and *Fringillidæ*, the existence of a sheath around the fibres appears to be questionable; and in the heart of such animals the fibres are remarkably indistinct. In the common water-vole I noticed a very clear appearance of primitive fibrils, yet these seemed to be nowhere collected into fascicles. In the great pectoral muscle of various small birds, as the common swift, the transverse streaks are very indistinct, and often difficult to be seen, although they are very plain in the muscles of the leg; yet in this bird the former muscle is highly developed, and almost constantly in action, while the latter are but small and little used. It will be recollected that the above remarks apply only to particular muscles, and are not to be considered as at all invalidating the admirable demonstration of the sarcolemma in many muscles by Prof. Schwann and Mr. Bowman, and the parallel observations of Dr. Jones Quain and Mr. W. J. E. Wilson*. As before observed, the fibres of the heart of Mammalia seem to have no intervening cellular (filamentous) tissue; this tissue, however, is easily observed in the heart of many lower vertebrate animals; and I have very recently seen minute wavy filaments, having all the characters of cellular tissue, in the heart of the bear, and of some other mammals which had died in confinement.”

The term fibre, as used in this paper, corresponds to the primitive fasciculus of Fontana, Müller, and Bowman†. As in the heart there

* See Phil. Trans. part ii. 1810, p. 475.

† *Loc. cit.* p. 458.

is often a tolerably clear appearance of fascicles, and as frequently only of the fillet-like bands, both are set down in the table annexed to the author's paper as fibres: the larger size of the fascicles at once distinguishes them from the bands, the primitive fibrils of the muscular tissue being out of the question. In the snake and newt the bands composed the tissue of the auricles, while a collection of these bands into fascicles appeared and was measured in the ventricles; the measurements show many parallel instances, and one in which the fascicles appeared in the auricle and the bands in the ventricle.

Mr. Gould exhibited to the Meeting an extensive collection of Australian *Halcyonidæ*, and characterized two new species belonging to this family as follows:—

HALCYON PLATYROSTRIS. *Halc. capite, dorsoque ex æruginè viridibus; alis caudâque virescenti-cæruleis; gulâ pallidè luteolâ, hâc colore gradatim apud nucham et partes corporis inferiores in ceruinum, vel arenaceo-luteolum transeunte.*

Spot before the eye buff; head and back verditer green; wings and tail greenish blue; throat very pale buff, gradually passing into the rich sandy buff of the back of the neck and the whole of the under surface; bill black; the base of the under surface of the lower mandible flesh-white.

Total length, $7\frac{1}{4}$ inches; bill, $1\frac{3}{4}$; wing, $3\frac{1}{4}$; tail, $2\frac{1}{2}$; tarsi, $\frac{1}{2}$.

Hab. Navigators' Islands.

For the knowledge of this new species Mr. Gould is indebted to the kindness of Mr. Cunningham, who collected it, and to Mr. Bennett, at Sydney, at whose suggestion Mr. Cunningham presented it, with some other interesting birds, to Mr. Gould, for the advancement of zoological science.

HALCYON SORDIDUS. *Halc. capite, dorso, plumis scapularibus tectricibusque alarum fusciscenti-virescentibus, alis virescenti-cæruleis, tertiariis ad apicem viridi-tinctis; caudâ virescenti-cæruleâ; torquæ collari, corporeque inferiore pallidè luteolis.*

Hab. North coast of Australia.

Head, back, scapularies and wing-coverts brownish oil-green; wings greenish blue, gradually changing into green on the tips of the tertiaries; collar surrounding the back of the neck and all the under surface buffy white; tail greenish blue; upper mandible and tip of the lower one black; base of the latter flesh-white.

Total length, 9 inches; bill, $2\frac{1}{4}$; wing, $4\frac{1}{4}$; tail, 3; tarsi, $\frac{5}{8}$.

From the collection of Benjamin Bynoe, Esq.

June 28.—William Yarrell, Esq., Vice-President, in the Chair.

A Monograph on the Coleopterous family *Phyllophoridæ*, by the Rev. F. W. Hope, was read. Following are the characters of the new species and genera contained in this paper.

Family PHYLLOPHORIDÆ, Hope.

Genus *Phyllophorus*, Hope.

Fœmina antennis filiformibus 11-articulatis, articulo 1^{mo} magno, ex-

ternè crassiore, duobus proximis brevibus, 7 sequentibus gradatim increscentibus et ferè trigonis, ultimo autem ovale, apice parum minori. *Palpi* haud securiformes. *Caput* impressum, maxillis obtusis unidentatis. *Thorax* lateribus carinatis, angulis posticis subspinosus, anticis subrotundatis. *Elytra* thorace quintuplo longiora, sulcata et rugosa, lateribus elevatis.

Phyllophorus gigas. *Elater gigas*, Fab., Syst. Eleut.

Genus *Tetralobus*, Serville.

Tetralobus flabellicornis. *Elater flabellicornis*, Fab.

Tetralobus cinereus, Gory, Ann. de la Soc. Ent. de France, tom. i. p. 220. pl. 4. fig. 1.

TETRALOBUS GORYI. *Tetr. Mas, fusco-cinereus, capite ferè quadrato, anticè subexcavato, angulis anterioribus rotundatis. Thorax marginatus, valdè convexus, ad scutellum elevatus, utrinque depressus, angulis posticis obliquè acutis. Elytra thorace triplo longiora, posticè rotundata, lineis elevatis parum distinctis, tomentosa. Corpus infrà piceo-cinereum, pectore pubescenti. Pedes tomentosi, femoribus compressis, tibiis subarcuatis, tarsisque flavo-membranaceis. Annuli abdominis utrinque foveolati. Long. corp. 18½ lin.; lat. 5½ lin.*

Hab. forsitan in Africâ.

Fœmina differt, long. 21 lin., lat. 6 lin.; antennis serratis, articulo ultimo tribus antecedentibus æquali, subacuto, abdomine multo convexiore.

A small variety of the above species exists in the rich cabinet of M. Dupont at Paris, and has been named by him *T. Sennarius*. It measures twenty lines in length, and differs also in the colour of its pubescence.

TETRALOBUS DUPONTI. *Tetr. nigro-cinereus, capite ferè quadrato, anticè excavato, tomentoso, angulis anticis rotundatis. Thorax convexus, subtilissime punctulatus haud foveis binis in medio impressus. Elytra thorace triplo longiora, ad suturam subacuminata, lineis vix distinctis. Corpus infrà piceum, tomentosum, binis ultimis annulis foveis, utrinque fortiter impressis. Pedes, femoribus, tibiisque compressis. Long. corp. 28 lin.; lat. 9 lin.*

In Musæo Dom. Dupont.

It is probable that the above species is from Africa. It was received by M. Dupont (in whose honour it is named) from a foreign traveller, who is lately dead. No locality is mentioned. The antennæ are imperfect.

TETRALOBUS SAVAGEI. *Tetr. totum corpus suprâ fusco-brunneum, aurantiisque capillis obsitum. Caput ferè quadratum angulis anticis rotundatis, anticè excavatum. Thorax convexus, angulis posticis acutis. Elytra thorace duplo longiora, aurataque pubescentiâ tecta. Corpus infrà abdomine piceo, pectore aurantiisque capillis longis obsito, femoribus tibiisque piceis tarsisque infrâ auricomatis. Long. corp. 13 lin.; lat. 4 lin.*

The above species I have much satisfaction in naming after an American clergyman, the Rev. T. S. Savage. His zeal in the col-

lecting of insects in Western Africa has tended to add greatly to our stock of information regarding the entomology of those countries. Respecting the Goliath Beetles, he has in store for us many important observations, having collected them in the bush: his remarks on them may shortly be expected to arrive in this country.

Tetralobus Australasiæ. Gory, Ann. de la Soc. Ent. de France.

TETRALOBUS FORTNUMI. *Tetr. totum corpus fuscum, auratâ pubescentid tectum, antennisque pedibus ferrugineis, elytrisque suturâ acuminatis. Caput vix emarginatum punctatum, fronte foveâ anticè impressâ. Antennæ ferruginæ. Fasciculus antennarum e lamellis novem rubro-ferrugineis. Thorax angulis anticis lateralibus, porrectis rotundatis; posticis acutis, disco varioloso-punctato, linedque longitudinali parum impressâ. Scutellum posticè rotundatum. Elytra striato-punctata, striis punctis fortiter impressis, internè acuminata, externèque rotundata. Corpus infrâ atro-piceum aureo tomentosum, capillis pectoris longioribus. Pedes ferruginei, tarsis subtùs pallidioribus et excavatis.* Long. corp. 12 lin.; lat. 3 lin.

The above insect was lately sent to this country by Mr. Fortnum, from the new settlement of Adelaide, and although closely allied to *T. Australasiæ* of Gory, is yet distinct; it is the smallest species that has fallen under my notice, and has been named in honour of the above assiduous collector.

TETRALOBUS PARRYI. *Tetr. niger, capite ferè quadrato, antrorsum foveolato, angulis anticis parum rotundatis. Oculis flavis. Thorax latus punctulatus. Elytra thorace triplo longiora, depressa, striata, striis valdè distinctis. Corpus infrâ nigrum, segmentis abdominis utrinque foveolatis, pedibus piceis, antennis ferrugineis.* Long. corp. 18 lin.; lat. $6\frac{1}{4}$ lin.

Hab. in Nubiâ. In Musæo Dom. Parry.

Captain Frederick Parry lately received this species in a box with other Nubian insects. It is of a remarkably depressed form, approaching somewhat in this respect to *Tetralobus Goryi*, which latter insect, however, is certainly much more convex, and differs from it also in various other minor points.

TETRALOBUS MANGLESII. *Fæm. fusco-picea, antennis articulo primo concolore, reliquis ferrugineis. Caput ferè quadratum, punctatum, oculis rubris et nitidis. Thorax valdè convexus, angulis anticis rotundatis, posticis acutis, lined longitudinali mediâ, foveâ utrinque compressâ insignitus. Elytra vix acuminata, striato-punctata. Corpus infrâ rubro-piceum, antennis tarsisque ferrugineis.* Long. corp. 17 lin.; lat. $4\frac{1}{4}$ lin.

Hab. in Novâ Hollandiâ.

The above insect was sent to me by Capt. Mangles, the Egyptian traveller, in whose honour it is named. He received it from the vicinity of the Swan River.

Since the above was written, I have discovered the male in the collection of the Linnean Society, and the following is a concise description of it:—

Fusco-piceus, articulo primo nigricanti, reliquis ferrugineo flabellatis.

Caput ferè quadratum, vix emarginatum. *Thorax* convexus, marginibus lateralibus subcarinatus. *Scutellum* valdè depressum. *Elytra* acuminata, substriato-punctata et sparsim punctulata. *Corpus* infrà fusco-piceum, pectore auratâ pubescentiâ tecto, pedibus ferrugineis et auricomatis.

TETRALOBUS AURICOMUS. *Tetr. aureo-tomentosus, antennis flabellatis nigris, thorace posticè producto, elytris thorace triplo longioribus, auricomatis, apicibus rotundatis. Corpus infrà aureo-tomentosum, pedibus concoloribus. Caput anticè rotundatum, fronte subfoveolatâ. Antennæ articulo 1^{mo} inæquali elongato subsecuriformi, 2^{do} et 3^{tio} minutis, reliquis trigono-ramosis, ultimo sublongo compresso, apice emarginato. Thorax anticè rotundatus, convexus, in medio disci foveâ utrinque impressâ, angulisque posticis acutis. Elytra auricomata vix sublineata. Corpus infrà tomentosum, annulis abdominis utrinque subimpressis. Long. corp. 12 lin. ; lat. 3 $\frac{3}{4}$ lin.*

IN MUSÆO DOM. GUERIN.

Hab. in Africâ.

Since the above description was written a more exact locality has been given me.

Hab. "Le fort de Sedou, au bord de la rivière Casamance, découvert par M. le Capitaine Mion."

TETRALOBUS ROBUSTUS. *Fœm. flavo-fusca, antennis valdè compressis. Caput anticè excavatum, flavisque capillis obsitum. Thorax convexus, angulis anticis rotundatis, posticis acutis. Elytra striata, ad apicem dehiscentia, subacuta. Corpus infrà flavofuscum, pectore aurato tomento obsito pedibusque concoloribus.*

From the remarkable compressed antennæ I am inclined to consider this insect, which was received from the island of Madagascar, as the type of a distinct genus. The following characters may be deemed sufficient to mark its peculiarities, which are chiefly taken from the antennæ, and hence it has been named

*Piezophyllus**.

Caput rotundatum, *antennis* valdè compressis, undecim articulatis, articulo 1^{mo} crasso, 2^{do} brevi, octo sequentibus gradatim decrescentibus, ultimo apice acuto. *Thorax* angulis anticis rotundatis, posticis acutis. *Elytra* subacuminata e suturâ dehiscentia lateribus medio subsinuatis. *Pedes* robusti, *tibis* subincurvis.

Other peculiarities might be mentioned; but as it is well-figured, however, its other characters may easily be distinguished.

PIEZOPHYLLUS SHUCKHARDI. *Tetr. atro-piceus, capite ferè quadrato, anticè parum excavato, angulis anticis subobliquè truncatis antennisque ferrugineis. Antennæ articulo 1^{mo} ferè trigono, crasso, 2^{do} 3^{tio} brevibus, 7 sequentibus lamelligeris; antennis capite thoraceque æqualibus. Thorax valdè convexus, lateribus carinulâ insignitis, angulisque posticis subacutis. Elytra sulcata. Corpus infrà atro-piceum, pectore hirsuto, flavisque capillis longis obsito.*

* *Piezophyllus*, from $\pi\acute{\iota}\epsilon\zeta\omega$ *premo*, and $\phi\acute{\upsilon}\lambda\lambda\omicron\nu$ *folium*.

Pedes picei, auricomi, femoribus tibiisque subcompressis. Long. corp. 24 lin. ; lat. 7 lin. ♀ Long. corp. 21 lin. ; lat. 7 lin.

I am indebted to Mr. Shuckhard for the above insect, and the species is most probably the *Tetralobus Dumolinii* of Dupont's cabinet. The antennæ and tarsi of this specimen were in too imperfect a state to describe.

PIEZOPHYLLUS SPENCEI. *Tetr. niger, antennis fusco-piceis, articulo primo nigricante. Caput ferè quadratum, anticè excavatum. Thorax robustus, valdè convexus, lined longitudinali impressâ foveâque utrinque insignitus et creberrimè punctulatus, angulis posticis ferè rectis et acutis, carinuld abruptè interruptâ. Elytra ad apicem dehiscencia, subacuta. Corpus infrâ atrum, pectore auricomato pedibusque concoloribus.* Long. corp. 16 lin.

Hab. in agro Senegalensi.

This singular insect is described from the rich cabinet of Monsieur Dupont in Paris, and it appears to belong to the same subgenus as *Tetr. Shuckhardi*. The same insect I have seen before, and as it was named after Mr. Spence, the celebrated entomologist, I have retained that name.

Oxynteris mucronatus. Elater mucronatus, Olivier.*

Olivier suspects that this insect is the female figured by Voet (vid. Coleop. tab. 45. fig. 34.); it was originally described from the cabinet of the Prince of Orange, and certainly differs from the *Flabellicornis* of Drury, which Olivier seems to doubt. The following short Latin characters separate it at once from *Tetralobus*.

Genus *Oxynteris*, Hope.

Caput anticè submarginatum, antennis ♂ apicibus flabellatis elytrisque in utroque sexu acuminatis. Thorax angulis anticis ferè rotundatis, posticis acutis. Elytra striata et mucronata, pedibus veluti in Tetralobo.

Each joint of all the tarsi is clothed beneath with a row of short golden-coloured plush, as in other species belonging to this genus.

OXYNTERIS AUDOUINI. *Oxyn., Mas, brunneo-cinereus, capite fortiter excavato, parum tomentoso. Thorax emarginatus, posticè subsinuatus, anticè aurantiis capillis obsitus, depressus. Scutellum rotundatum. Elytra brunneo-cinerea, parum tomentosa. Corpus infrâ nigro-cinereum. Pedes concolores, femoribus tibiisque compressis, tarsisque piceis.* Long. corp. 62 lin. ; lat. 23 lin.

The above species was described by me, during my late residence in Paris, from the collection at the Jardin des Plantes. It is named in remembrance of the late Professor Audouin, who succeeded to the entomological chair held by the celebrated Latreille. The locality was not stated; I believe it, however, to be from the East Indies, although I cannot actually specify its real locality. It seems to differ considerably from *mucronatus* of Olivier.

OXYNTERIS CUMINGII. *Oxyn. fusco-flavus, antennis ferrugineis.*

* From *ὄξύων* acuo, and *πτερόν* penna.

Caput clypeo rotundato atro, medio disci subsulcato. Thorax fuscus, marginibus elevatis, angulis anticis parum productis, posticis acutis et extùs divergentibus. Scutellum posticè rotundatum atrum. Elytra acuminata fusco-flava, tribus lineis parùm elevatis insignita. Corpus infrà atro-piceum, femoribus concoloribus. Mesosternum fortiter excavatum, cornu aprosterni ad medios pedes porrecto. Long. corp. 36 lin. ; lat. 11 lin.

Fœmina magnitudine differt, thorace etiam paullo latiore antennisque compressis.

The light castaneous appearance of the elytra of the above insect must in a great measure be attributed to abrasion : when recently captured it was remarkable no doubt for a golden pubescence above and beneath, which is a characteristic of other allied species. The above magnificent species is named in honour of Mr. Cuming the conchologist, whose important discoveries at Manilla in various branches of zoology entitle him to the thanks of the naturalists of England. It may be mentioned with regard to the above insects, that the joints of all the tarsi are clothed with a row of short golden-coloured plush ; the head and thorax are covered also with very short gray pile, and in the male the elytra are fulvous red, whilst in the female they are saturated on the disc with brown ; the latter sex is also a quarter of an inch larger than the male. It is also worthy of notice that the joints of the antennæ to which the leaflets are attached gradually increase after the third joint, the extreme being the most marked.

OXYNOPTERUS LATIPENNIS. Nigro-fuscus, antennis concoloribus, elytris acuminatis et piceis. Caput ferè quadratum, anticè excavatum rugoso-punctatum. Thorax latus, angulis anticis vix productis, posticis acutis, lateribus marginibus elevatis. Elytra atro-picea tomentosa, apicibus acutis. Corpus infrà nigrum, pedibus ferrugineis. Long. corp. 24 lin. ; lat. 8 lin.

Hab. in Africâ.

The above species was received by me in a box of insects from the Cape of Good Hope : for some time I was induced to regard it as an Asiatic species, but since I have lately received a species nearly similar in form from Sierra Leone, it may be an African insect. It is remarkably broad for a male ; the disc of the thorax also is slightly convex. A label attached to it has 'Gold Coast' written on it.

In Musæo Dom. Hope.

Fœmina adhuc latet.

OXYNOPTERUS JAVANUS. Oxyn. fusco-flavus et aureo-tomentosus, antennis ferrugineis. Caput atrum, antennis thorace ferè duplo longioribus. Thorax anticè emarginatus, angulis utrinque productis, posticis acutis et divergentibus. Elytra acuminata fusco-picea aurato-tomentosa. Corpus infrà nigrum, pedibus nigricantibus tomento suprâ aspersis, tarsisque auricomatis. Long. corp. 23 lin. ; lat. 7 lin. ♀ Long. corp. 28 lin. ; lat. 8¼ lin.

Fœmina differt antennis compresso-serratis et fuscis.

Hab. in insulâ Javæ.

The above insects, male and female, were brought to this country by Dr. Horsfield from the island of Java; at first I was inclined to consider the species as the *mucronatus* of Olivier, but the figure in Voet is quite different. I have no hesitation in recording it as another species, and it may be remarked here that the above insects are in a good state of preservation, and that all the species of flabellate Elaters with pubescence should be described immediately they are captured, as when dead they change considerably in colouring, often turning black and greasy, so that it is impossible accurately to describe them as in their original state.

LEPTOPHYLLUS STRACHANI. *Lept. (Mas) piceus, capite anticè excavato antennis, capite cum thorace ferè duplo longioribus, elytrisque acuminatis. Caput ferè quadratum, anticè excavatum rugosum, antennæ thorace duplo longiores, lamellis elongatis et ferrugineis. Thorax undique marginibus elevatis conspicuis, angulis anticis parùm productis, obtusis, posticis acutis et extùs divergentibus. Elytra valdè acuminata marginata picea et aurato-tomentosa. Corpus infrà concolor, femoribus tibiisque compressis. Fœmina adhuc latet. Long. corp. 26 lin. ; lat. 7 lin.*

The above species was brought to this country by Mr. Strachan, long time a resident at Sierra Leone. His zeal in urging his friends to collect insects in that climate has been the means of considerably enriching our metropolitan collections, and to him chiefly we are indebted for our acquaintance with the Goliath beetles. I have named the insect above described in honour of this gentleman, who has exhibited such a remarkable zeal in favour of zoology. When his health declined in consequence of the bad climate, he yet made arrangements with his friends for enriching our collections at home. He returned to England, after resigning his laborious situation, broken in health but unsubdued in spirits, and hence we may hope that his health will shortly be re-established. The following characters appear to me sufficient to form into a subgenus, allied to *Oxynterus*, the above insect which I have denominated *Leptophyllus*, from the long leaflets which compose the antennæ.

*Leptophyllus**, Hope.

Caput ferè quadratum, anticè emarginatum. Antennæ 11-articulatæ, 1^{mo} magno, 2^{do} subtrigono, octo sequentibus ferè æqualibus et lamellatis, undecimo triplo majori. Thorax angulis anticis rotundatis, posticis acutis, lateribus marginatis et carinatis. Elytra posticè acuminata, pedibus unguibus ferè æqualibus.

The anatomical sections of this genus are so fully figured by Mr. Westwood that there is no necessity for more ample details, as they may be detected on reference to the plate.

Pectocera†, Hope.

Caput fortiter emarginatum. Antennæ valdè pectinatæ, novem ulti-

* From λεπτός *tenuis*, and φύλλον *folium*.

† πεκτός or πηκτός *combed*, and κίρας *horn*, in short, comb-horned antennæ.

mis articulis, dentibus gradatim increscentibus, ultimis longissimis. *Thorax* anticè rotundatus, angulis posticis acutis. *Elytra* acuminata, pedibus simplicibus.

The remaining characters may easily be seen in the accompanying plate. It appears to me that the above genus is mediate between *Tetralobus* and *Ludius* and *Ctenicera*.

PECTOCERA CANTORI. *Pect. fusco-castanea, antennis valdè pectinatis brunneis. Thorax niger tomentoque aureo aspersus. Elytra fusco-castanea, apicibus acuminatis. Corpus infra pilosum, cinereis flavisque capillis obsitum. Segmenta abdominis utrinque brunneo-maculata, maculis glabris. Long. corp. 10 lin.; lat. 2¼ lin.*

Hab. in agro Assamensi.

The above insect I received from Dr. Cantor before he quitted England, and I have since received it from the Khasyah Hills: it is named in honour of the above zealous naturalist.

PECTOCERA MELLII. *Flavo-fusca griseoque variegata, antennis pectinatis. Thorax angulis posticis acutis, subtomentosus. Elytra posticè valdè acuminata, pedibusque fusco-flavis et pubescentibus. Long. corp. 12¼ lin.; lat. 3 lin.*

Hab. circa Semlaa in agris Thibetianis. E Musæo Dom. Melly descriptus.

Mr. Gould exhibited a new species of Hawk, belonging to the genus *Elanus*, which he thus characterizes:—

ELANUS SCRIPTUS. *Elan. fronte et lined superoculari albis; capite et corpore subtùs saturatè cinereis, rufescenti-fusco lavatis; tectricibus alarum fulgidè nigerrimis; parte aë interiorè notà latà nigrà, per humerum et antibrachium eductà, instar literæ V (aut potiùs VV, utriusque aë paginà interiorè in conspectu,) impressà.*

Forehead and line over the eye white; head and all the upper surface dark grey, washed with reddish brown; wing-coverts deep glossy black; primaries greyish brown, becoming nearly white on their webs, all but the first two or three margined with white at the tip; secondaries brownish grey on the outer web, white on the inner and at the extremity; tertiaries brownish grey; two centre tail-feathers grey; the remaining tail-feathers pale brown on their outer webs and white on the inner; lores black; all the under surface and edge of the shoulder white; on the under surface of the wing following the line of the bones a broad mark of black assuming the form of the letter V, or if both wings are seen at once, of a W; bill black; cere and legs yellow; claws black; irides orange.

Total length, 15¾ inches; bill, 1¼; wing, 12¼; tail, 7¼; tarsi, 1½.

Hab. South Australia.

Mr. Gould next called attention to a collection of Birds from India, recently presented to the Society by Walter Ewer, Esq.

BOTANICAL SOCIETY OF LONDON.

Dec. 16, 1842.—Dr. William Hughes Willshire in the Chair.

Dr. John Lhotsky read a paper “On the Limits of Vegetation.”

Jan. 6, 1843.—J. E. Gray, Esq., F.R.S. &c., President, in the Chair.

The Rev. W. H. Coleman presented a specimen of *Carex Boenhausiana* (Weihe) found by him in Herts.

Dr. John Lhotsky read a paper “On the Sugar of *Eucalyptus*.”

Jan. 20.—Adam Gerard, Esq., in the Chair.

Mr. Robert Embleton presented a specimen of *Maianthemum bifolium* (DeC.), *Convallaria bifolia* (Linn.), found by him at Howick in Northumberland.

A paper was read from Mr. William Gardiner, jun., being “Localities for the rarer Alpine *Hypna*.” The paper was accompanied by specimens.

Feb. 17.—J. E. Gray, Esq., F.R.S. &c., President, in the Chair.

Mr. T. Clarke, jun. presented specimens of a large variety of *Lastræa Filix mas*, found by him at King’s Cliff Valley near Bridgewater.

Mr. G. H. K. Thwaites read a paper, being a notice of the discovery of *Grimmia orbicularis*, a moss new to Britain, which was found by him upon St. Vincent’s Rocks, Bristol. The foliage is not distinguishable from that of *Grimmia pulvinata*; the capsule however is abundantly distinct, being globose instead of ovate, and having a conical instead of a rostrate operculum. Both species grow upon St. Vincent’s Rocks, and are sometimes intermingled, but each retains its peculiar characteristics, so that *Grimmia orbicularis* cannot be considered a variety of *G. pulvinata*. Specimens of the former species accompanied the paper.

Read also a paper from Mr. T. Beesley, being “Additions to the List of Plants found in the neighbourhood of Banbury, Oxfordshire, in 1842.”

March 17.—J. E. Gray, Esq., F.R.S. &c., President, in the Chair.

Mr. David Moore of the Royal Botanic Garden, Dublin, presented a specimen of *Carex paradoxa* (Willd.) found by him in Ladiston Woods, Mullingar, Westmeath, Ireland, in July last.

Mr. Arthur Henfrey (Curator) read a paper “On the British species of *Statice*.”

BOTANICAL SOCIETY OF EDINBURGH.

This Society met on the 9th of March (Dr. Neill in the Chair) when the following papers were read:—

1. “Remarks on the Mode of Growth of the British Fruticose *Rubi*, &c.” By Mr. Edwin Lees, F.L.S.

2. “Continuation of Remarks on the *Diatomaceæ*.” By Mr. John Ralfs, M.R.C.S.L., Penzance.

3. "On *Fumaria micrantha* and *F. calycina*." By Mr. C. C. Babington, M.A., F.L.S. &c.*

4. "On two new species of *Jungermanniæ*, and another new to Britain." By Thomas Taylor, M.D.: communicated by Mr. William Gourlie, jun., Glasgow.

5. "Notice of the new fossil plant, *Lyginodendron Landsburgii*, Gourlie." By Mr. William Gourlie, jun.

Mr. James Macnab exhibited a magnificent cluster of the male catkins of a palm from one of the South Sea Islands, which Lady Harvey had obtained from the captain of a vessel, and kindly allowed to be shown to the Society. Its dimensions, when expanded, were about three feet by three and a half, and it somewhat resembled an ornamental grate-screen formed of shavings.

April 13th.—Professor Graham in the Chair.

The attention of the Society was chiefly directed to a donation by William Brown, Esq., R.N., consisting of a miscellaneous collection of plants and fruits from Canton river and Chusan, and from the Cape and Prince's Island, including a collection of forty species of *Ericææ* from Simond's Bay and Table Mountain.

The following papers were read:—

1. "Two Botanical Visits to the Reeky Linn and Den of Airly, in April and June 1842." By Mr. William Gardiner, Dundee.

2. "On the *Diatomaceæ*." No. VI. By Mr. Ralfs, Penzance.

MISCELLANEOUS.

Note on a Vermiferous kind of Blood of a Dog, caused by a great number of Hæmatozoa of the genus Filaria. Communicated by MM. Gruby and Delafond to the French Academy of Sciences.

PHYSIOLOGISTS and anatomists have long since detected the presence of certain entozoa in the nutritive fluid of cold-blooded animals, as, for instance, frogs and fish. In the mammiferæ, worms have sometimes been found in the blood; but these worms had probably only come there after having perforated the organs in which they had developed themselves. It is of very great importance to physiology, pathology, and natural history, to demonstrate, not merely the existence of entozoary worms in the blood, but moreover to prove their constant circulation in that fluid, in animals which come near to man. Now, since science is not as yet in possession of any example demonstrating conclusively the circulation of worms in the blood of mammiferous animals, we are most anxious to communicate to the Academy the discovery which we have made of Entozoa circulating in the blood of a dog of a vigorous constitution, and in a state of apparent good health.†

These worms are from 3 to 5 millièmes of a millimetre in diameter, and about 25 in length. The body is transparent and colourless. The anterior extremity is obtuse, and the posterior or caudal

* See last Number of Annals.—ED.

† Observations, however, of this kind will be found described at pp. 48 and 49 of the 10th vol. of this Journal.—ED.